

REMARKS

In response to the office action, applicant has canceled claims 1-9 without prejudice. Applicant has also amended independent claim 10. Claims 10-14 remain pending in the application.

Nonstatutory Double Patenting Rejections

Claim 10 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 10 of copending Application No. 10/805,472.

Applicant hereby obviates the provisional double patenting rejection by submitting herewith a terminal disclaimer.

Claim Rejections Under 35 U.S.C. 102

Claims 1-3, 6-7, and 10 are stated to be rejected under 35 U.S.C. 102(a) as being anticipated by Applicants' admitted prior art (APA), figure 3.

In response to this rejection, applicant has canceled claims 1-3 and 6-7 without prejudice.

Applicant has also amended independent claim 10 to patentably distinguish it from APA (figure 3), including by way of adding some limitations. The added limitations are essentially same to limitations removed from claim 10 in the previous Amendment dated Sep. 14, 2005. Thus, *no new search/consideration is required*. Applicant respectfully traverses the rejection as to amended claim 10 for the following reasons:

APA (figure 3) discloses an in-plane switching (IPS) liquid crystal display (LCD), which includes a first substrate 11, a second substrate 12, and

a liquid crystal layer 13 interposed therebetween. The first substrate 11 includes in turn a first transparent sheet 111, a color filter layer 112, and a first alignment film 113 facing the liquid crystal layer 13. The second substrate 12 includes in turn a second transparent sheet 121, an insulating layer 124, and a second alignment film 125 facing the liquid crystal layer 13.

Amended claim 10 now recites “[a]n in-plane switching liquid crystal display, comprising: a first substrate comprising a first transparent sheet; a second substrate comprising in turn a second transparent sheet, an insulating layer, and further comprising a plurality of pixel electrodes and common electrodes parallel to each other and a plurality of thin film transistors formed between the second transparent sheet and the insulating layer; and a liquid crystal layer interposed between the first and the second substrates; wherein the in-plane switching liquid crystal display comprises only one alignment film, and the alignment film is applied to the second substrate directly facing said liquid crystal layer.”

The subject matter of amended claim 10 includes a first substrate comprising a first transparent sheet and a color filter, a second substrate comprising a second transparent sheet, and only one alignment film, wherein the alignment film is applied to the second substrate. In APA (figure 3), an IPS LCD includes a first alignment film 113 arranged on a color filter 112 on a first transparent sheet 111 of a first substrate 11, and a second alignment film 125 formed on an insulating layer 124 on a second transparent sheet 121 of a second substrate 12. These differences indicate that the structure of the IPS LCD of amended claim 10 is clearly distinct from that of APA (figure 3).

Moreover, the IPS LCD of amended claim 10 produces new and

unexpected results. That is, the pixel and common electrodes can produce a horizontal electric field parallel to the first and the second substrate, and an intensity of the horizontal electric field and an alignment force of the alignment film both gradually decrease as a distance between the horizontal electric field and the first substrate decreases. This is because the IPS LCD includes only one alignment film, and the alignment film is applied to the second substrate. That is, no alignment film is applied to the first substrate. As a result, a plurality of liquid crystal molecules of the liquid crystal layer are twisted to an essentially same angle by the cooperation of the electric field force and the alignment force, which leads to a high transmission ratio. Because the liquid crystal molecules adjacent to the first transparent sheet are easy to twist due to the weak alignment force, the IPS LCD of the amended claim 10 can work at a lower voltage.

However, in APA, an intensity of the horizontal electric field gradually decreases as a distance between the horizontal electric field and the first substrate decreases, and alignment force of the first and the second alignment films increases as a distance between the horizontal electric field and the first substrate decreases. Therefore, liquid crystal molecules adjacent to the first substrate are subjected to a weak horizontal electric field intensity and a strong alignment force, while liquid crystal molecules adjacent to the second substrate are subjected to a strong horizontal electric field and a weak alignment force. As a result, the liquid crystal molecules adjacent to the first substrate have smaller twisting angles than those adjacent to the second substrate, which leads to a relatively poor transmission ratio. In order to eliminate the problem, a higher voltage is needed to make the liquid crystal molecules twist at a same angle.

In addition, in APA (figure 3), the first alignment film is formed on the color filter layer by an alignment treatment, which may damage the color

filter layer. Because the IPS LCD of amended claim 10 has no alignment film formed on the color filter, the IPS LCD of amended claim 10 can avoid the problem of damage occurring to the color filter.

Accordingly, amended claim 10 is submitted to be both novel and unobvious over APA. Reconsideration and withdrawal of the rejection of amended claim 10 are respectfully requested.

Claim Rejections Under 35 U.S.C. 103

Claims 3-5, 8-9 and 12-14 are stated to be rejected under 35 U.S.C. 103(a) as being unpatentable over APA, figure 3, in view of Gillian et al., U.S. Patent No. 5,861,931.

In response to this rejection, applicant has canceled claims 3-5 and 8-9 without prejudice.

Applicant respectfully traverses the rejections as to claims 12-14 for the following reasons:

Applicant refers to and relies upon the above remarks regarding amended claim 10 and APA. Further, Gillian does not disclose or suggest that an IPS LCD includes only one alignment film. Applicant respectfully submits that Gillian does not provide any additional teaching to the teachings of APA which might lead one of ordinary skill in the art to provide the IPS LCD of claim 10. That is, APA in view of Gillian does not teach or suggest to one of ordinary skill in the art that he or she might or should provide the in-plane switching liquid crystal display comprising only one alignment film, wherein the one alignment film is applied to the second substrate as recited in amended claim 10.

Claims 12-14 depend directly from claim 10, and therefore should also be patentable. Reconsideration and withdrawal of the rejections of claims 12-14 are respectfully requested.

In the Office Action Summary, claim 11 is stated to be rejected. However, applicant cannot find any reasons for the rejection in the Detailed Action. Applicant submits that claim 11 depends from claim 10, and should also be patentable. If in a next Office communication the rejection of claim 11 is maintained, applicant requests that the finality of the current Office action be withdrawn, in order that applicant be given reasonable opportunity to respond to the rejection of claim 11.

Respectfully submitted,
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